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Search History

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Set Name side by side	Query	Hit Count	Set Name result set
DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L20	l14 same L19	32	L20
L19	((road adj work) or (road adj construction) same display$)	1470	L19
L18	l11 and L17	348	L18
L17	l14 and L16	399	L17
L16	(road adj work) or (road adj construction)	6803	L16
L15	l13 same L14	13	L15
L14	navigation	99392	L14
L13	construction adj display$	3330	L13
L12	L11 and l8	29	L12
L11	display$	2074287	L11
L10	l6 and L8	14	L10
L9	l4 and L8	0	L9
L8	(road adj construction) near1 location	37	L8
L7	l3 and L6	1	L7

L6	plan$	3686327	L6
L5	l3 and L4	0	L5
L4	trip adj plan$	123	L4
L3	l1 and L2	2	L3
L2	route or road	789061	L2
L1	(road adj construction) near1 report	2	L1

END OF SEARCH HISTORY

L7: Entry 1 of 1 File: PGPB Feb 3, 2005

DOCUMENT-IDENTIFIER: US 20050027442 A1
TITLE: Agenda replicator system and method for travelers

Abstract Paragraph:
In automotive GPS navigation systems, a traveler's agenda with multiple desired destinations can be entered in a largely automatic fashion by downloading an agenda table created using the agenda replicator system and methods disclosed herein. The replicator system includes computer hardware and software systems, operable by a user, to acquire and store, apart from a vehicle and its GPS navigation system, personal travel agenda information for later transfer to a storage subsystem of the vehicle's GPS navigation system. The hardware system may be implemented as a desktop or laptop computer, or even a personal digital assistant. The software system includes program components for controlling the hardware and providing a data structure in which personal travel information selected by the user is placed in an agenda table. The replicator system includes means for transferring the information from this data structure into a storage subsystem of the vehicle's GPS navigation system. In this manner, the agenda replicator system allows an agenda table to be created by the user while in an office or other convenient location, and then be easily transferred to the storage subsystem of the vehicle's navigation system. The disclosed replicator system and methods also allow the user to specify personal preferences in the agenda table. These in turn allow the route-planning subsystem to do a better job of selecting routes to follow when traveling from one destination to the next.

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Summary of Invention Paragraph:
[0002] The present invention relates in general to systems and methods for users to plan and input itineraries and travel agendas into GPS-based automatic positional or navigation systems for automotive vehicles, and in particular to systems and methods for developing and storing on an office computer or personal computer itinerary and related travel agenda information and then replicating that information by transferring it to a vehicle-based GPS navigation system, thereby helping the busy traveler/car driver.

Summary of Invention Paragraph:
[0005] Some users of such automotive vehicle positioning systems, like sales and service personnel who are on the road, may stop at a several different locations before returning to their office or other starting/ending point of the trip. It is time-consuming and burdensome for a user to enter extensive information into a positioning system when traveling, or making plans to travel, to several different locations in sequence.

Summary of Invention Paragraph:
[0007] Generally, there are at least a few ways to get from a starting point to most destinations. Some of the currently-available positioning systems can generate alterative routes from the starting location to the user's destination location.

This is due in part to those systems being loaded with extensive street and detailed map information on DVDs or other mass-storage devices available for such systems. However, the systems generally do not provide any information that might help the user decide or select which alternative route to choose, based upon a particular user's needs or preferences.

Summary of Invention Paragraph:
[0008] An important variable that influences the choice of route is the desired time of arrival at the user's destination. Current user-directed land-based vehicle navigation systems of which we are aware do not provide for the entry of the time of arrival as a variable to be used in selecting the route.

Summary of Invention Paragraph:
[0009] Besides desired time of arrival, we have recognized that there may be other factors which may influence a user when manually planning a route to choose one route over other alternative routes. Currently available positioning systems of which we are aware do not take such user preferences into account when planning or selecting routes for the user.

Summary of Invention Paragraph:
[0010] Some of the most regular users of vehicle navigation systems, such as sales and service personnel, may need to travel to a sequence of locations during a given day or trip. Some current user-based routing systems allow for the entry of different destinations in sequence. However, while en route, a call from the boss or an important client or prospective customer may cause such a traveler to change his or her originally planned itinerary or travel agenda for the day or trip. Therefore, such users need flexible routing capabilities, but w e are unaware of the vehicle-based GPS navigation systems having the flexibility to easily add or delete or rearrange the order of a list of planned destinations, once a sequence of destinations has been entered, particularly with regard to destinations other than perhaps the last one on the list.

Summary of Invention Paragraph:
[0011] Users of vehicle navigation systems involved in sales or in providing services to customers frequently spend time at their own offices, or their customer's offices, shops, homes or other locations, making and confirming plans relative to their next stop or two or three. Such users often will sit at their own offices or some other base station and make phone calls to various clients or customers. When at their desks, they typically have available to them various sources of information to assist in the planning of an itinerary or a route that are not available as part of a vehicle-based navigation system. They may also have one or more staff members or assistants to help them locate needed addresses or contact people. They likely may have available a desk-top computer, a lap-top computer and/or a hand-held computer such as a personal digital assistant (PDA). These computers and portable devices often have much easier-to-use input devices and/or more convenient methods of entering data into them than does the typical automotive GPS navigation system of which we are aware. In addition, there is other helpful information on these traditional office computers or devices such as an electronic calendar, an electronic memo file, and an address book that might well assist in the route or itinerary planning process. Examples of combined personal information management and e-mail communication systems having such features include, but are not limited to, Lotus Notes, Corel Central, Microsoft Outlook and at least certain models of the Blackberry and Palm brands of PDAs.

Summary of Invention Paragraph:
[0012] To summarize, we have recognized that in one's office, there are many types of other useful reference materials on the Internet or on a personal task list or memo file that might be helpful in planning a route, such as databases containing names, addresses and phone numbers for businesses, maps of cellular phone coverage and other types of information. Currently, there is no way we know of for readily

duplicating or transferring needed information, including but not limited to addresses and itineraries, which likely resides on one or more desktop or laptop computers or handheld PDA devices, relative to planning routes or itineraries, so that this useful information becomes readily available on an automotive vehicle navigation system.

Summary of Invention Paragraph:
[0013] In light of the foregoing limitations associated with the known vehicle-based itinerary and/or agenda planning systems and methods, as part of the present invention, we have recognized that there is a better way to facilitate itinerary and route planning within the office or other non-vehicle locations, and then to make that itinerary and route planning information more readily available when on the road. We have also recognized that there is a need to be able to transfer the customized information that the average sales or service person who is on the road tends to collect in paper and/or electronic form and make it more readily available to that person through his or her electronic GPS-based navigation systems and related car information systems. The customized information useful to sales and service personnel and to others who regularly travel by car or truck includes the information from address books, appointment calendars, memo files and things-to-do lists. Often times, this information is nowadays captured in electronic address books, calendars and the like, and may be available on the user's desktop or laptop in a personal information management software package or in the user's PDA.

Summary of Invention Paragraph:
[0014] Also as part of the present invention, we have recognized that this information, along with information pertinent to planning the itineraries, can be captured or organized in electronic files, tables or data structures usable in vehicle-based GPS navigation systems, and then transferred thereto, or to suitable storage memory subsystems in an automotive vehicle that is connected to the vehicle's GPS navigation system. Preferably, those storage memory subsystems are provided with suitable data structures or databases for holding and accessing the transferred information. In this manner, using the user interface input devices and the visual display provided on modem vehicle-based GPS navigation systems, that information can be accessed while in the vehicle, even if one does not have his or her laptop or PDA handy in the vehicle. Further, we have recognized that user-preferences and other user-customized information can be incorporated into and made part of the route-planning process, particularly when multiple stops are envisioned, and that all of the foregoing information can be used both outside of the vehicle and within the vehicle to plan travel agendas and itineraries.

Summary of Invention Paragraph:
[0015] In light of the foregoing recognitions, we have devised the computerized systems and methods of the present invention for collecting such information in useful form, such as an agenda table (or any other suitable database) in a separate "agenda replicator" system outside of a vehicle, which system is separate and apart from a vehicle-based navigational system. This replicator system also allows the collected information in the agenda table and/or other data structures to be viewed by the user in order to check it for accuracy, among other things, and modify it as desired. The replicator system importantly also has the ability to then transfer in an automated fashion that collected information upon user command to a vehicle-based navigational system or the storage subsystem associated therewith. Also, as part of the systems and methods of the present invention, with suitable agenda-planning and trip-planning software, we have are able to plan multiple-destination agendas or itineraries in such an agenda replicator system outside of a vehicle and apart from its vehicle-based navigational system. Then, using the agenda replicator system and method, we are able to transfer the data representing the prepared itinerary or other personalized agenda information from that replicator system into the vehicle-based navigational system, where it can be put to effective use. In this manner, the agenda replicator systems and methods of the present invention save time and facilitate on-the-go planning, since, as will be seen, an agenda can

be readily changed and updated even in the middle of a multiple-stop road trip.

Summary of Invention Paragraph:
[0016] In light of the foregoing limitations of the agenda planning capabilities of vehicle-based navigation systems of which we are aware, and to implement the enhanced agenda-planning features mentioned above, there is provided, in accordance with one aspect of the present invention, a novel agenda replicator system for use by travelers in connection with a computerized GPS navigation system of the type installed on an automotive on-road vehicle. Specifically, such a navigation system preferably has a storage subsystem for storing at least a plurality of user-selected addresses intended as an agenda to be traveled with the assistance of the GPS navigation system. Such a navigation system also preferably has route-planning and route-monitoring subsystems for assisting with a vehicle user with the navigational tasks relative to traveling to such selected addresses. The present invention provides, for selective use within this environment, a computerized agenda replicator system, operable by the regular user(s) of the on-road vehicle, for transferring personalized travel agenda information developed with such a replicator system while away from the on-road vehicle, into the vehicle's storage subsystem, so that it can be used by and with the GPS navigation system.

Summary of Invention Paragraph:
[0019] There is also provided, in accordance with the present invention, a method for transferring personal travel agenda information from a first computer system to an automotive vehicle-based computer system with GPS navigation capabilities and with route-planning capabilities. The method allows the transfer to take place in an automated fashion. The personal travel agenda information specifies destinations and related personal route-planning user preferences. The first computer system may be implemented as a desktop or laptop computer or as a personal digital assistant (PDA) which is distinct and physically separate from an automotive vehicle and its GPS navigation system. This method of the present invention preferably has the following steps: (a) Providing a first computer system with a first memory for storage of personal travel agenda information to be used in an agenda table for specifying at least first and second desired destinations, sequence information relative to the destinations, and at least a first item of personal preference information associated with each desired destination. (b) Loading into a first memory information for specifying at least first desired destination. (Typically a plurality of desired destinations will be loaded into the first memory.) (c) Loading into the first memory at least a first unit of personal preference information associated with the first desired destination. (In practice, multiple personal preferences may be loaded into the first memory.)

Summary of Invention Paragraph:
[0020] Further steps of the method of the present invention include: (d) Checking the information loaded in steps (b) and (c) for accuracy via a display associated with the first computer system; (e) Establishing a first communications path between the first computer system and a first storage subsystem associated with a vehicle based GPS navigation system, whereby digitized information may be transferred across such communications path. (f) Downloading into the first storage subsystem of the GPS navigation system personal agenda information that was based upon the information loaded into the first memory as part of steps (b) and (c). Optionally, the method may further comprise the following steps: (g) updating a travel agenda table in the GPS navigation system with at least part of the personal agenda information downloaded in step (f); and (h) instructing the GPS navigation system to perform route-planning for reaching the first desired destination in the information downloaded from the first computer system.

Summary of Invention Paragraph:
[0021] In an exemplary embodiment of the present invention, the agenda table may contain one or more agenda items, e.g., desired destinations, the estimated time it will take the user to travel to each agenda item along the planned route, and the

route information (e.g., individual roads selected and directions to follow) which the positioning system has generated. An agenda item is a descriptor that identifies the location to which the user needs directions. The descriptor may be almost any type of word, abbreviation, picture or symbol (including the name of a person or company to be visited at the desired destination) that identifies with sufficient uniqueness the address of the desired destination to which the user is traveling. If the desired time of arrival is entered, then the route-planning subsystem should generate a route that allows the user to arrive at his or her destination on or before that time and preferably without exceeding posted speed limits on the roads of the specified route.

Summary of Invention Paragraph:
[0022] Factors such as readily described road conditions or other attributes associated with travel on certain roads that would influence a user to choose one route over another are described herein as personal travel preferences. For instance, if the user intends to spend most of his or her time on the road making or receiving phone calls with a cellular phone, the availability of adequate cell phone coverage over the entire route might be a significant factor influencing the choice of a driving route. If the user wishes to minimize the amount of fuel consumed, then fuel consumption required by the alternative routes would be a significant factor. If the user wishes to avoid unpleasant driving conditions, such as congested roads, construction zones, areas prone to excessive snow in the winter, areas prone to flooding in heavy rain, or other adverse road conditions including on-going construction zones, then such conditions are factors that may possibly be as user preferences in systems and methods of the present invention. The availability of places of interest to the user along a route could also be considered a preference. Such places could include, for example, restaurants, gas stations, historic or scenic sites, and various types of stores or facilities at which the user may need or may possibly wish to stop. To the extent that any of these conditions and factors can be associated with roads, streets and highways through databases or other computer resources, which can be accessed and/or interrogated while on line or through stored databases, then this information can can be used by route planning subsystems to optimize planned routes and/or estimated time of arrival calculations. According to one aspect of our invention, these preferences are to be specified as factors in the agenda table, so that they will considered as appropriate by the agenda replicator system, and by vehicle-based GPS navigation system, and any route planning subsystem used in either system. Specifically, these factors may be specified by the user thereof so that his or her preferences are employed as an integral part of route planning and/or estimated time of arrival calculations, as will be further explained.

Summary of Invention Paragraph:
[0023] It would be helpful for a route-planning subsystem of the GPS navigation system to be able to automatically compute routes if the user decided not to stop at one of the locations in an agenda table at which the user earlier planned to stop. This is another aspect of our invention. Accordingly, our systems and methods may be arranged to operate as follows. When a location is dropped from the user's itinerary as specified in a travel agenda table, then, the agenda replicator system of the present invention updates the starting point for the trip to the next location changes. Accordingly, the systems of the present invention may be arranged to automatically recalculate the route information, based upon the updated information, including the dropped agenda item and/or a new current starting point location of the vehicle. In this manner, the user does not have to reenter information about the other following destinations. Instead, the system upon being prompted helps this process by automatically updating the agenda tables and re-generates any routes previously planned that are affected by the changes, as will be further explained. These and other aspects of the present invention may be further understood by referring to the detailed description, accompanying Figures, and appended claims.

Brief Description of Drawings Paragraph:
[0032] FIGS. 12 and 13 illustrate how the process software for implementing the systems and methods of the present invention can be deployed through an On Demand business model, which allows the process software to be shared and simultaneously service multiple customers in a flexible, automated fashion under a pay-for-what-you-use plan.

Detail Description Paragraph:
[0034] To better understand various aspects of the systems and methods of the present invention, it is useful to discuss briefly the subsystems and capabilities of known GPS navigation systems in use on automotive vehicles or proposed for use in on automotive vehicles by earlier patents and/or publications. Today's vehicle-based GPS navigation systems are rather sophisticated dedicated computer systems with a few specific subsystems. The global positioning satellite systems are well-known and in wide use in a variety of applications, and have proven very popular for vehicle positioning and vehicle navigation systems for automotive vehicles. By the term "automotive vehicle" as used herein (including in the claims) we mean a land vehicle specifically designed for use on roads and highways, such as cars, vans, sport utility vehicles, trucks, buses and motorcycles. The details of the operation of GPS navigation systems for automotive vehicles are well-understood and need not be discussed herein, except to briefly review some of their major subsystems by way of introduction to certain aspects of and purposes for and/or use of the agenda replicator systems and methods of the present invention.

Detail Description Paragraph:
[0035] Vehicle-based GPS navigation systems for automotive vehicles are rather sophisticated application-specific computer systems and typically having a few specific subsystems, each performing some task or series of tasks. First, there is a GPS position-sensing system which allows a vehicle's current location to be determined to within about one to a few meters, on a very regular basis, based upon received GPS signals from orbiting global positioning satellites and information derived and calculations made therefrom. Second, there may be a heading and speed subsystem which calculates direction and/or relative speed. Third, there may be a GPS coordinate-versus-location database system where known GPS coordinates for many streets, highways and roads, and intersections of same are stored at regular intervals, and the location of the vehicle and/or addresses can be looked up from stored information and/or derived by interpolation from GPS coordinates stored in the database system. The storage for this kind of database system may be employ solid-state memory and/or CD-ROMs, DVDs or other suitable mass memory devices for storing and/or accessing this location information.

Detail Description Paragraph:
[0036] Fourth, there may be a route-finding subsystem, that, given the current vehicle position and direction and very recent historical data points for same, and given the GPS coordinate vs. location database, is able to determine a vehicle's estimated current position relative to a detailed road map of the area in which the vehicle is currently traveling. Fifth, there may be a route-generating system, which is capable of creating suggested routes to go from one location (point A) to another location (point B) using known streets, roads and highways in its database. Sixth, there normally is a visual display system for projecting images, such as maps and selected routes thereon often in superimposed fashion, in order to show the area over which the vehicle is to travel and/or is traveling, and/or for projecting a text list of detailed road directions to be followed in order to go from Point A to Point B.

Detail Description Paragraph:
[0043] The computer system 32 also includes, as desired, suitable electronic and/or optical interface cards and cable/connectors 60 and 62, such as network card and cable 64, mouse connector 66 and other cables/connectors shown therebetween on left and right sides of the lower half of enclosure 35. These are standard interface

cards and cable/connectors, which may be purchased as off-the-shelf components, and thus need not be further described. Also shown in bottom portion 15 is cable modem 70 which connects to the Internet (INT) represented by an oval 72. Suitable bidirectional communications paths 73 and 75 provide digital access to an archetypical Internet web site (WS) 78, through which database information (DBI) on an almost limitless variety may be obtained. In regard to the systems and methods of the present invention, database information about roads (R), weather conditions (W.) and cell phone coverage (C), as they relate to on-the-road automotive travel situations and related conditions or items of interest while traveling may be obtained from such websites.

Detail Description Paragraph:
[0044] As is well-known, information in digital electronic form is available from the Internet via public information sources and private paid-subscription commercial database services about many different types of information relating to roads. As the on-line digital revolution progresses, we expect that increasingly greater and more varied amounts of road-related information and conditions and allied subjects useful to advanced GPS navigation systems for travelers will become available. We fully expect that such information can be used to advantage by automotive travelers who use the systems and methods of the present invention. In the discussion herein, the term "roads" is a generic reference to all forms of public thoroughfares, including streets, byways, boulevards, business routes, bypasses, country roads, highways, expressways, free roads, toll roads, and everything in between, designed for on-road automotive vehicle travel. Either presently or in the future we expect that virtually all roads will show up on commercially available detailed maps and databases for automotive vehicle-based GPS positioning systems including but not limited to navigation systems. "Road information" available now or in the future from public and private databases and web sites and commercial services (collectively called "on-line information sources") may include but is not limited to construction zones, temporary closings, and/or temporary bottlenecks and/or alternate routes due to construction, congestion, special events, traffic conditions and/or accidents.

Detail Description Paragraph:
[0055] Internally, computer system 24 includes a central processing unit (CPU) 170 and if desired, a real-time clock system (RT-CS) 172, in order to provide accurate time keeping for speed in distance measurements and calculations among other things. System 24 also includes read-only memory (ROM) 173, random access memory (174), and optionally internal flash memory (FMEM) 175 and/or programmable read-only memory (PROM) 176. Further, as shown inside of the left upper corner of the dotted box of FIG. 1, computer system 24 may have various kinds of software loaded into a suitable form of memory. The software of computer system 24 includes: operating system software (OSS) 181, optional voice recognition system (VRS) software 182, optional voice production system software 183, and optional route agenda execution software (RAES) 184.

Detail Description Paragraph:
[0056] As shown in inside the upper right hand corner of FIG. 1 dotted box, computer system 24 may also includes route agenda planning software (RAPS) 190 with associated optional memory (MEM) 191, vehicle route planning software (VRPS) 192, vehicle locating software (VLS) 193, and the GPS (navigation) system supervisor software (GPSSS) 194, for managing and coordinating the operation of the other system 22 software components and subsystems. The operation of the route agenda planning software 190 is described in further detail below.

Detail Description Paragraph:
[0058] As can be seen from the foregoing description, the possibility of multiple communication links exist between computer systems 24 and 34. This in turn provides several different ways to take an agenda table and related information (including a calendar information and electronic address book information not necessarily used

in a particular agenda table) that has been gathered, stored and/or updated on one of the computer systems 34 or 24 and then transfer it over to (by copying or cutting and pasting) to the other computer system 24 or 34, or perhaps a different computer system altogether. For example, if two vehicles were being taken to the same destination, and each had a GPS navigation system 22 of the type described in FIG. 1, the computer system 24 in those two different vehicles could be loaded with identical information, so that two vehicles could travel substantially the same routes and visit the same destinations, even though the two automotive vehicles might get separated in traffic or otherwise not be traveling in lockstep fashion together between the different destination points. Conversely, information from the vehicle-based GPS navigation system 22 from a single vehicle could be transferred to two computer systems 34. For example, a salesperson could take information from his or her vehicle GPS system equipped with the agenda replicator system of the present invention, and transfer agenda table information or other related travel information generated on the road in system 22 to both an office computer system 34 and a substantially similar home computer system 34', both of which may be equipped with agenda replicator systems of the present invention. The systems and methods of the present invention have still further uses which will be described below and/or become apparent from the total description of the systems and methods in this disclosure.

Detail Description Paragraph:
[0059] The Use of Preferences in Route-Planning.

Detail Description Paragraph:
[0060] Time-of-Arrival Preferences. At certain times, the most important consideration in planning a route is the time by which the traveler must arrive at a certain destination. Generally, a business traveler has an appointment with another party that is set for a particular time. The route to be taken must be a route that allows the traveler to arrive at his destination prior to the time of the appointment. Accordingly, the time by which a traveler needs to arrive at a destination can be used as one of the parameters for route planning.

Detail Description Paragraph:
[0061] In addition to the desired time of arrival at a destination, other factors may influence the desired route to be taken by a traveler in traveling to a specific destination. These factors may change depending upon a host of things known to the individual traveler and what needs to be accomplished. Some of the more important other preferences for modem travelers will now be briefly discussed, followed by an explanation of how these preferences may be integrated with systems and methods of the present invention.

Detail Description Paragraph:
[0062] Cell-Phone Coverage Preferences. For example, it is well known that cell phone coverage is poor in outlying rural areas and away from major highways. So, when the traveler departs from the well-traveled expressways and enters rural areas, he or she is at risk of losing cell phone coverage. Accordingly, for the traveler who needs to be able to communicate by cell phone while driving (by taking routes where cell phone coverage is substantially complete), specifying this factor may well be very important. It may even be the predominant concern to the traveler who had to participate in an important conference call while en route. Presently, detailed maps are available on the Internet showing cell phone coverage for the six different major carriers within the United States. Such map information is available in some instances with GPS coordinates. The availability of cell phone coverage across the United States and in other countries in such a format (i.e., with GPS information attached) will only increase over time to include virtually all cell phone carriers. Accordingly, this cell phone coverage area information can be used as one of the parameters for route planning.

Detail Description Paragraph:

[0063] Road-Condition Preferences. Another user preference relates to road conditions. The U.S. National Weather Service has maps showing current weather conditions, near-term projected weather conditions and long term historical weather conditions for travelers across many parts of the United States. Some of this information is available with GPS information attached and more of this kind of information is becoming available in GPS format. In certain areas, certain roads are known to become impassable due to flooding conditions during heavy rains. In other areas, such as the Great Lakes and certain areas along the coasts, certain bridges are closed due to high wind and/or high wave conditions and/or flood tide conditions. In such instances, a traveler may need to take an inland route that avoids bridges or the areas where flooding may occur. Similarly, snow conditions in mountains often closes various mountain passes. At times, alternate routes are available around those mountain passes. Again, the U.S. Weather Service provides information pertinent to such snow conditions. One aspect of our invention is to take such GPS-based weather reports and factor it into routes recommended by the navigation system.

Detail Description Paragraph:
[0064] "Scenic" Route Preferences. Another user preference which applies to those who travel by automobile is a desire, on occasion, to take the "scenic" route versus the most direct route. For example, visitors from out of state and other countries are often picked up at a local airport and thereafter driven to another more distinct location, such as an office, a customer site, a local conference center or a resort. During a trip from the airport to such locations, the driver may deliberately wish to take a more "scenic" route so that the visitor will have a more complete impression of the diverse aspects of the local area than if the most direct but scenically "boring" route were taken. Some electronic map information available on DVD-based map systems or some available on the Internet presently indicate "scenic" routes. This scenic route information can be used by the GPS route planning software.

Detail Description Paragraph:
[0065] One aspect of the systems and methods of the present invention is to include such preference information in the route planning information provided in an agenda table. In this manner, the route planning software of the GPS system can take these preference into account automatically. For example, in the agenda table there can be a further column in which the preferences are put based upon priority. The preferences could be appropriately coded, such as the following: "F" for fastest route, "S" for scenic route; "CC" for "continuous cell" phone coverage route; "W" for the route most likely to have hazardous weather conditions (such as high winds, snow, flooding, etc.); "EO" for "expressways only" for a route that has the least number of traffic lights and which selects the expressways in preference to business routes through town; "NE" for "no expressways" routes (which a driver might select when he or she does not like driving on higher speed roads); and "NC" for "no congestion" meaning those routes which are likely to have the least traffic congestion and/or stop-and-go traffic conditions. These and still other user preferences which are available can all be utilized by route planning software. Importantly, we recognize, as part of the present invention, that this preference information should be information that can be entered into agenda replicator system, where it can be looked at and an agenda finalized before the agenda table with such preference information is loaded into the actual vehicle-based navigation system with route-planning capabilities.

Detail Description Paragraph:
[0066] As shown in FIG. 2, the GPS Agenda Table 200 is a data structure which contains an agenda portion 210 which contains agenda items 221-226, an estimated time to the destination portion 230 which contains estimated times to destination 231-237, and a route portion 240 which contains routes 241-247 which are generated by route planning software. Thus each agenda item, 221-227, has a corresponding estimated time to destination, 231-237, and a corresponding route, 241-247. An

agenda item 210-226 minimally contains an appointment time, i.e., the time at which the user desires to arrive at the location, and an identifier or descriptor that describes the location. This identifier or descriptor can be an address or the name of the party whom the user is meeting. The time to destination 230 is dynamically computed by the route planning software. The route planning software can either use a factor which is based on the time of day to take into account variations in traffic patterns and congestion and the expected time to complete the route or the route planning software GPS uses the time to travel the distance and the amount of traffic on the route, as determined by website or radio transmissions. If the agenda item contains a descriptor rather than an address, the system will search for the address associated with the descriptor by searching through the user's address book and the Internet, if necessary. The time to destination 231-237 is updated dynamically whenever the GPS Agenda Table is accessed.

Detail Description Paragraph:
[0069] As shown in FIG. 3, the process of 300 of replicating the agenda begins with the calendar. The calendar is a standard part of any personal information management system. The process begins by determining whether new agenda items need to be added to the user's calendar or whether entries on the calendar need to be updated as shown in decision box 310. If the agenda needs to be updated, then new entries are then added to the calendar as shown in block 320. The system then queries the user to see if the user wants to update a GPS route 240 for any new items added as shown in decision box 330. If the user indicates that the GPS route is to be updated, the user can select an agenda item from the calendar as shown in box 340. The agenda item can be a single entry in the calendar, a day of entries, a week of entries or any group of entries. If the user does not wish to update the GPS route, then the process of establishing GPS Agenda Table 200 has been completed and the method exits as shown in block 450.

Detail Description Paragraph:
[0070] As part of the updating process shown in box 320, the user may delete an item from the calendar or may change an item in the calendar. If there was an entry in the GPS Agenda Table 200 corresponding to that agenda item, then that route information for that changed or removed entry is also deleted. Typically, after deleting an item, the user would choose to update the routes of any remaining items affected by such a deletion. If the user changes the information in a calendar item, the user would choose to update the route associated with such an item and any other items that were affected. For instance, if the first destination to which the user had intended to travel on a particular day is deleted, the user would need to update the routes for the remaining destinations to which he had planned to travel that day.

Detail Description Paragraph:
[0073] FIG. 4 depicts the method of replicating the GPS agenda table created from the calendar on the vehicle-based system which includes a GPS navigation system with route planning software, which will at times be called a GPS device. The destination and the requested time of arrival are used as input to the GPS device. The process of agenda replication starts by determining whether the GPS agenda table created from the calendar matches the agenda stored in the vehicle-based GPS device as shown in decision diamond 500. If there is not a match, then the calendar item in the GPS Device is updated with the agenda information from the calendar item in the office-based agenda replicator system as shown in block 530. Once the agenda stored in the vehicle-based GPS device matches the agenda table from the user's calendar, then the process selects all items in the GPS agenda table that do not have any route information generated as shown in block 510. Then, the GPS device generates routes for all agenda items that did not have a route as shown in block 520. The agenda replication process is completed at this point.

CLAIMS:

1. In connection with a computerized GPS navigation system of the type installed on an automotive vehicle, and having a storage subsystem for storing at least a plurality of user-selected addresses intended as an agenda to be traveled with the assistance of the GPS navigation system, and having a route-planning subsystem for assisting a vehicle user with the navigational tasks relative to traveling to such selected addresses, a computerized agenda replicator system, operable by at least a first regular user of the on-road vehicle, for transferring personal agenda information developed within such a replicator system when away from the on-road vehicle, into the vehicle's storage subsystem, the replicator system comprising: a first computer hardware system, operable by a user to acquire and store, apart from any vehicle and any GPS navigation system, personal travel agenda information for later transfer to a storage subsystem of a GPS navigation system of an automotive vehicle for use by the navigation system, the first computer system including a first memory operable for holding at least temporarily first and second program components; a second memory operable for storing selected personal travel agenda information including at least first and second desired destinations; a first visual display operable for viewing representations of at least some of the personal agenda information stored in the second memory; at least first data entry means operable by a user of the replicator system for selectively entering into the first computer system data constituting personal travel agenda information including desired destination information; at least first data transfer means operable for automatically transferring data constituting personal travel agenda information including desired destination information stored in the first computer system to an output portal for transfer outside of the first computer system; and a first computer software system for controlling at least part of the first computer hardware system, the software system including a first program component for providing a first data structure for holding within the second memory, personal travel agenda information selected by the user, the data structure being arranged to include desired destination information and to be loaded at least in part with data from the first data entry means, and a second program component for providing, upon user command, a transfer of personal travel agenda information including first and second desired destinations from the second memory through the first data transfer means to the output portal; whereby the first computer system is operable to transfer personal travel agenda information including at least a plurality of destinations stored therein to the storage subsystem of the vehicle-based navigation system.

6. The agenda replicator system of claim 1, wherein the personal travel agenda information includes: a plurality of desired destinations to which a user of the agenda replicator system desires to travel; information about a sequence in which the user wishes to travel to the desired destinations, information about desired time of arrival at each desired destination; and a plurality of personal preference selections associated with a plurality of desired destinations, the personal preference selections being selected from the group of personal preference information consisting of desired date of departure, desired time of departure, cell phone preference, scenic route preference, toll road preference and express route preference.

8. The agenda replicator system of claim 1, wherein: the agenda table includes fields operable to be loaded with descriptors that identify desired destinations to which the user of the system desires to travel, desired times of arrival associated with each desired destination, and at least one other item of personal travel agenda information associated with desired destinations; and the first computer system includes: a hand-portable battery-powered portable computer with attached data entry means and an attached visual display unit, the portable computer system being selected from a group of such systems consisting of notebook computers, laptop computers and personal digital assistants; a third program component operable to compute a dynamic time to destination based upon a plurality of factors effecting driving time selected from the group of factors including day of the week, time of the day, amount of traffic in an area to be traveled, weather-related

road conditions, type of road, reported road construction and reported of traffic slow downs; and a fourth program component forming part of the navigation system and operable for periodically updating expected time to reach a desired destination as the user is traveling to the destination, with the updates being based upon at least a plurality of factors effecting driving time selected from the group of factors including day of the week, time of the day, amount of traffic in an area to be traveled, weather-related road conditions, road type, road construction and reports of traffic-slowing incidents.

9. A method for transferring personal travel agenda information, in an automated fashion, regarding destinations and related personal route-planning user preferences from a first computer system that is distinct and physically separate from an automotive vehicle to an automotive vehicle-based computer system with GPS navigation capabilities and with route-planning capabilities, the method comprising the steps of: (a) providing a first computer system with a first memory for storage of personal travel agenda information to be used in an agenda table for specifying at least first and second desired destinations, sequence information relative to the destinations, and at least a first item of personal preference information associated with each desired destination; (b) loading into a first memory information for specifying at least first desired destination; (c) loading into the first memory for specifying at least a first unit of personal preference information associated with the first desired destination; (d) checking the information loaded in steps (b) and (c) for accuracy via a display associated with the first computer system; (e) establishing a first communications path between the first computer system and a first storage subsystem associated with a vehicle based G PS navigation system, whereby digitized information may be transferred across such communications path; and (f) downloading into the first storage subsystem of the GPS navigation system personal agenda information that was based upon the information loaded into the first memory as part of steps (b) and (c).

11. A method for transferring personal travel agenda information as in claim 10, further comprising the step of: (g) instructing the GPS navigation system to perform route-planning for reaching the first desired destination in the information downloaded from the first computer system.

12. A method for transferring personal travel agenda information as in claim 10, in which the GPS navigation system is installed in a specific automotive vehicle, and wherein, as part of the instructing step, the GPS navigation system is advised to perform route-planning for reaching the first desired destination from the current location of the vehicle, as determined by the GPS system.

13. A method for as set forth in claim 9, further comprising the step of: (g) loading into a first memory information specifying at least a second unit of personal preference information associated with the first desired destination; the second unit being selected from the group of personal preference information consisting of date of departure, desired time of departure, desired time of arrival, cell phone preference, scenic route preference, toll road preference and express route preference.

15. A method according to claim 12, wherein the step of viewing includes viewing at least a first portion of a planned route between the vehicle's current location and the first destination.

16. A method according the claim 9, further comprising the steps of: (g) loading into a first memory information for specifying at least a second unit of personal preference information associated with the first desired destination; (h) loading into a first memory information specifying at least second desired destination; (i) loading into the first memory at least a first unit of personal preference information associated with the second desired destination; (j) loading into a first memory information for specifying at least a second unit of personal

preference information associated with the second desired destination; and (k) checking the information loaded in steps (h) through 0) for accuracy via a display associated with the first computer system; and (l) downloading into the first storage subsystem of the GPS navigation system personal agenda information that was based upon the information loaded into the first memory during steps (g) and (j), and wherein each such second unit of information being selected from the group of personal preference information consisting of date of departure, desired time of departure, desired time of arrival, cell phone preference, scenic route preference, toll road preference and express route preference.

20. The method of claim 9 including the step of deploying process software for transferring personal travel agenda information, in an automated fashion, regarding destinations and related personal route-planning user preferences, the deployment comprising the steps of: installing the process software on at least one server; identifying server addresses for users accessing the process software on the at least one server; installing a proxy server if needed; sending the process software to the at least one server and copying the process software to a file system of the at least one server; sending the process software to at least a first client computer; and executing at least the process software on the first client computer.

26. The method of claim 9 including integrating process software for transferring personal travel agenda information, in an automated fashion, regarding destinations and related personal route-planning user preferences, the integration comprising the steps of: determining if the process software will execute on at least one server; identifying an address of the at least one server; checking the at least one server for operating systems, applications and version numbers for validation with the process software, and identifying any missing software applications for the server that are required for integration; updating the server with respect to any operating system and application that is not validated for the process software, and providing any of the missing software application for the server required for the integration; identifying client addresses and checking client computers for operating systems, applications, and version numbers for validation with the process software, and identifying any software applications missing from the client computers that are required for integration; updating the client computers with respect to any operating system and application that is not validated for the process software, and providing any missing software application for the client computers required for the integration; and installing the process software on the client computers and the at least one server.

27. The method of claim 9 including on demand sharing of process software for transferring personal travel agenda information, in an automated fashion, regarding destinations and related personal route-planning user preferences, the on demand sharing comprising the steps of: creating a transaction containing unique customer identification, requested service type, and service parameters; sending the transaction to at least one main server; querying the at least one main server about processing capacity associated with the server to help ensure availability of adequate resources for processing of the transaction; and allocating additional processing capacity when additional capacity appears needed to process the transaction, the additional processing capacity being selected from the group of additional capacities consisting of central processing unit capacity, processor memory capacity, network bandwidth capacity, and storage capacity.

32. The method of claim 9 including deploying, accessing, and executing process software for transferring personal travel agenda information, in an automated fashion, regarding destinations and related personal route-planning user preferences, through a virtual private network, the method further comprising the steps of: determining if a virtual private network is required; checking for remote access to the virtual private network when it is required; if the remote access does not exist, identifying a third party provider to provide secure, encrypted

connections between a private network and remote users; identifying the remote users; and setting up a network access server for downloading and installing client software on desktop computers for remotely accessing the virtual private network; accessing the process software; transporting the process software to at least one remote user's desktop computer; and executing the process software on the at least one remote user's desktop computer.

35. A computer program product, to be used in conjunction with a travel agenda replicator system for transferring personal travel agenda information, in an automated fashion, regarding destinations and related personal route-planning user preferences, the replicator system having at least one computer having at least one processing circuit, the software product comprising: a storage medium readable by at least the one processing circuit and storing instructions for execution for by the processing circuit for performing a method comprising the steps of--(a) providing a first computer system with a first memory for storage of personal travel agenda information to be used in an agenda table for specifying at least first and second desired destinations, sequence information relative to the destinations, and at least a first item of personal preference information associated with each desired destination; (b) loading into a first memory information for specifying at least first desired destination; (c) loading into the first memory for specifying at least a first unit of personal preference information associated with the first desired destination; (d) checking the information loaded in steps (b) and (c) for accuracy via a display associated with the first computer system; (e) establishing a first communications path between the first computer system and a first storage subsystem associated with a vehicle based G PS navigation system, whereby digitized information may be transferred across such communications path; and (f) downloading into the first storage subsystem of the GPS navigation system personal agenda information that was based upon the information loaded into the first memory as part of steps (b) and (c).

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